

# Saima Shahid

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Donald Danforth Plant Science Center  
975 N Warson Road, St Louis, MO 63132

## EDUCATION

- 2017 **Ph.D., Plant Biology**  
Penn State University, University Park, PA, USA  
*Dissertation title - Discovery of plant small RNAs and their role in trans-species gene regulation*  
Advisor: Michael J. Axtell
- 2009 **M.S., Biochemistry and Molecular Biology**  
University of Dhaka, Dhaka, Bangladesh  
*Thesis title - Understanding stress response in rice: isolation and analysis of stress inducible regulatory elements/sequences*  
Advisor: Zeba I. Seraj
- 2008 **B.Sc. (Honors), Biochemistry and Molecular Biology**  
University of Dhaka, Dhaka, Bangladesh

## PROFESSIONAL EXPERIENCE

- 08/2018 – **Postdoctoral Associate, Donald Danforth Plant Science Center.** PI: Dr. R. Keith Slotkin  
Project: *Mechanism of de novo identification and silencing of naïve transposable elements in plant genomes*
- 12/2017 – 07/2018 **Postdoctoral Researcher, Ohio State University**  
PI: Dr. R. Keith Slotkin  
Project: *Investigating the epigenetic component in Soybean aphid virulence against resistant host plants*
- 06/2010 - 07/2011 **Research Associate, University of Dhaka, Bangladesh**  
PI: Dr. Zeba I. Seraj  
Project: *Expression pattern of salt-inducible genes in rice landraces*
- 01/2010 - 02/2011 **Molecular Biologist/Bioinformatician, Jute Genome Project, Dhaka, Bangladesh**  
Project in collaboration with University of Dhaka, University of Hawaii at Manoa, and Bangladesh Jute Research Institute  
PI: Dr. Maqsoodul Alam  
Project: *Annotation of C. olitorious microRNAs and their targets*
- 06/2009 - 12/2009 **Research Associate, University of Dhaka, Bangladesh**  
PI: Dr. Zeba I. Seraj  
Project: *Analysis of cis-elements in stress-inducible plant promoters*

## **AWARDS & HONORS**

2019 - 2022	Simons Fellow of the Life Science Research Foundation
2019	Plantae Fellow
2018	Penn State Nominee for Northeastern Association of Graduate Schools doctoral dissertation award
2017	Travel stipend, Huck Institutes of the Life Sciences, Penn State University
2017	Department of Biology Travel grant, Penn State University
2014	J. Ben & Helen D. Hill Memorial Fund Award, Penn State University
2013	Department of Biology Travel grant, Penn State University
2011	Braddock Graduate Scholarship, Penn State University
2011	Funds for Excellence in Graduate Recruiting Award, Penn State University
2009	Scholarship for academic excellence in B.Sc. Honors, University of Dhaka
1998 - 2000	Bangladesh Government Merit Scholarship

## **PUBLICATIONS**

### ***Google scholar profile***

<https://scholar.google.com/citations?user=lez4bclAAAAJ&hl=en>

### ***Submitted Manuscripts***

Yang Z, Wafula EK, Kim G, **Shahid S**, McNeal JR, Ralph PE, Yu W, Kelly E, Zhang H, Altman NS, Axtell MJ, Westwood JH, dePamphilis CW: Stolen genes in parasitic plants: convergent horizontal transfer and crosstalk of mobile nucleic acids. *Revision submitted to Nature plants in February, 2019.*

### ***Peer Reviewed Publications***

12. Choudury S, **Shahid S**, Cuerda-Gil D, Panda K, Cullen A, Ashraf QUA, Sigman MJ, McCue AD, Slotkin RK (2019) The RNA export factor ALY1 enables genome-wide RNA-directed DNA methylation. *The Plant Cell*. DOI:10.1105/tpc.18.00624
11. **Shahid S**, Kim G, Johnson NR, Wafula EK, Wang F, Coruh C, Bernal-Galeano V, Phifer T, dePamphilis CW, Westwood JH and Axtell MJ (2018) MicroRNAs from the parasitic plant *Cuscuta campestris* target host messenger RNAs. *Nature* 553, 82-85. DOI:10.1038/nature25027\*\*
  - \*\*Research highlighted in *Nature Reviews Genetics*, DOI: 10.1038/nrg.2018.3
  - \*\*Research spotlighted in *Molecular Plant*, DOI: 10.1016/j.molp.2018.02.004
  - \*\*Commentary in *Non-coding RNA investigation*, DOI: 10.21037/ncr.2018.07.01
  - \*\*Recommended by *F1000 Prime*, DOI:10.3410/f.732394304.793541780
10. Islam MS *et al.* (including **Shahid S** and Alam M) (2017) Comparative genomics of two jute species and insight into fiber biogenesis. *Nature plants* 3, 16223. DOI:10.1038/nplants.2016.223
9. **Shahid S\***, Begum R\*, Razzaque S, Jesmin, Seraj ZI (2016) Variability in amylose content of Bangladeshi rice cultivars due to unique SNPs in *Waxy* allele. *Journal of*

*Cereal Science* 71, 1-9. \*These authors contributed equally.

[DOI:10.1016/j.jcs.2016.07.006](https://doi.org/10.1016/j.jcs.2016.07.006)

8. Coruh C, Cho SH, **Shahid S**, Liu Q, Wierzbicki A, Axtell MJ (2015) Comprehensive annotation of *Physcomitrella patens* small RNA loci reveals that the heterochromatic short interfering RNA pathway is largely conserved in land plants. *The Plant Cell* 27(8), 2148–2162. [DOI:10.1105/tpc.15.00228](https://doi.org/10.1105/tpc.15.00228)
7. Kwok CK, Ding Y, **Shahid S**, Assmann SM, Bevilacqua PC (2015) A stable RNA G-quadruplex within the 5'-UTR of *Arabidopsis thaliana* ATR mRNA inhibits translation. *Biochemical Journal* 467(1), 91–102. [DOI:10.1042/BJ20141063](https://doi.org/10.1042/BJ20141063)
6. Coruh C, **Shahid S**, Axtell MJ (2014) Seeing the forest for the trees: annotating small RNA producing genes in plants. *Current opinion in plant biology* 18, 87–95. [DOI:10.1016/j.pbi.2014.02.008](https://doi.org/10.1016/j.pbi.2014.02.008)
5. **Shahid S**, Axtell MJ (2013) Identification and annotation of small RNA genes using ShortStack. *Methods* 67(1), 20–27. [DOI:10.1016/j.ymeth.2013.10.004](https://doi.org/10.1016/j.ymeth.2013.10.004)
4. *Amborella* Genome Project (including **Shahid S** and Axtell MJ) (2013) The *Amborella* genome and the evolution of flowering plants. *Science* 342(6165), 1241089. [DOI:10.1126/science.1241089](https://doi.org/10.1126/science.1241089)\*\*  
 \*\*Research perspective in *Science*, DOI:10.1126/science.1248709  
 \*\*Recommended by *F1000 Prime*, DOI: 10.3410/f.718214247.793492833,  
 10.3410/f.718214247.793491231, 10.3410/f.718214247.793489834
3. Azad A, **Shahid S**, Noman N, Lee H (2011) Prediction of plant promoters based on hexamers and random triplet pair analysis. *Algorithms for Molecular Biology* 6(1), 19. [DOI:10.1186/1748-7188-6-19](https://doi.org/10.1186/1748-7188-6-19)
2. Lisa LA, Elias SM, Rahman MS, **Shahid S**, Iwasaki T, Hasan AM, Kosuge K, Fukami Y, Seraj ZI (2011) Physiology and gene expression of the rice landrace Horkuch under salt stress. *Functional Plant Biology* 38(4), 282–292. [DOI:10.1071/FP10198](https://doi.org/10.1071/FP10198)
1. **Shahid S**, Elias SM, Biswas S, Seraj ZI (2010) READS-a resource for plant non-coding regulatory sequence analysis. *Plant Tissue Culture and Biotechnology* 20(2), 211–223. [DOI:10.3329/ptcb.v20i2.6916](https://doi.org/10.3329/ptcb.v20i2.6916)

## **TEACHING EXPERIENCE**

### ***Teaching Assistant, Biology Department Pennsylvania State University***

Fall 2016

Biology: Molecules and Cells (lab component)

Spring 2015

Biology: Function and Development of Organisms  
(lab component)

Fall 2013

Biology: Molecules and Cells (lab component)

Fall 2012

Biology: Molecules and Cells (lab component)

### ***Instructor, Upward Bound Summer Academy***

Summer 2014

Designed, wrote, and implemented a curriculum for a 7-day course focused on plant genomics, with hands-on lessons on

using common bioinformatics tools for sequence analysis

**Research Associate, Plant Biotechnology Lab, University of Dhaka**

01/2011 – 07/2011      Trained undergraduate and postgraduate students for using common bioinformatics tools and databases in their projects

**INVITED TALKS**

- 2019      3<sup>rd</sup> annual MU Plant research symposium, University of Missouri, Columbia, MO
- 2019      3<sup>rd</sup> annual Bioinformatics and Beers, Donald Danforth Plant Science Center, St. Louis, MO
- 2017      14<sup>th</sup> World congress of Parasitic Plants, Pacific grove, CA
- 2017      Annual meeting of Northeastern section of American Society of Plant Biologists, Yale University, New haven, CT
- 2016      Annual meeting of American Society of Plant Biologists, Austin, TX
- 2014      Annual meeting of American Society of Plant Biologists, Portland, OR
- 2010      6th International Plant Tissue Culture & Biotechnology Conference, Dhaka, Bangladesh

**CONTRIBUTED TALKS**

- 2017      Department of Molecular Genetics, Ohio State University, Columbus, OH
- 2015      Plant biology seminar, Penn State University, University Park, PA

**POSTER PRESENTATIONS**

- 2019      Gordon Research Conference – Epigenetics, Holderness, NH
- 2017      Graduate exhibition, Penn State University, University Park, PA
- 2015      Annual meeting of American Society of Plant Biologists, Minneapolis, MN
- 2015      GWIS 94th Annual Meeting and Science Symposium, Penn State University, University Park, PA
- 2015      20<sup>th</sup> Penn State Plant Biology symposium, University Park, PA
- 2014      Bioinformatics and Genomics Retreat, Huck Institutes of the Life Sciences, Penn State University, University Park, PA
- 2013      Genome Informatics Meeting, Cold Spring Harbor Laboratory, NY

**OUTREACH**

- 01/2019      Raspberry Pi Jam at Donald Danforth Plant Science Center [Volunteer]
- 04/2017      Girl Scout workshop with Graduate Women in Science (GWIS) [Organizer] - utilized craft activities for teaching the rules of genetic code and demonstrated genomic DNA isolation with household products
- 02/2017      State College Exploration U at Bald Eagle Area High School [Organizer]- showed how light and temperature can affect cytoplasmic streaming in the waterweed *Elodea*
- 05/2016      Judge for the 82nd Annual Pennsylvania Junior Academy of Science (PJAS) competition
- 04/2016      GWIS Girl Scout workshop featuring the science behind carbonated pop rocks candy [Volunteer]

- 03/2016 State College Exploration U with GWIS at Nittany Valley Charter School  
[Volunteer] - demonstrated how sound waves are actually pressure waves  
using Rubens' tube
- 01/2016 Penn State '*Expanding Your Horizons*' outreach with GWIS [Organizer] -  
demonstrated DNA isolation from different plants and decoding of genetic  
information hidden in DNA
- 11/2015 Strawberry DNA isolation outreach for Nittany Valley Charter School  
[Organizer]
- 09/2015 Penn State Science U with GWIS [Volunteer]  
Outreach on astronomical optics, showcasing basic principles of telescopes
- 09/2014 Penn State Science U event '*Think outside the Beaker*' [Volunteer] -  
outreach explaining mechanism of DNA evolution to grade 6-8 students

## **PROFESSIONAL ACTIVITIES**

### ***Peer reviewer***

Nucleic Acids Research

Bioinformatics

Environmental Sciences Europe

BMC Genomics

New Phytologist

Plant Direct

### ***Memberships***

American Society of Plant Biologists

Global Network of Bangladeshi Biotechnologists